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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/809,841 | 03/26/2004 | Fumio Futami | 826.1940 | 8145 |
| 21171 | 7590 | 06/28/2006 | EXAMINER | |
| STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005 | | | ROGERS, KELLY A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2828 | |

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/809,841

Applicant(s)

FUTAMI ET AL.

Examiner

Kelly A. Rogers

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8 and 11 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 9 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The specification objections of page 10, line 12 and page 12, lines 9-11 are withdrawn based on applicant's amendment filed on May 24, 2006.

Claims 1-11 are pending.

The claim objections of claims 7 and 9 are withdrawn based on applicant's amendment filed on May 24, 2006.

Response to Arguments

Applicant's arguments filed May 24, 2006 pertaining to claims 1, 6, and new claim 11 have been fully considered, but they are not persuasive. The applicant argues that Watanabe et al.'s discussion does not relate to the claimed present invention, because Watanabe et al. relates to extending the spectrum of each optical pulse with respect to the associated spectrum and a number of spectral components are taken out from thus obtained extended set of spectrum so as to generate optical pulse arrays of which the wavelengths are respectively different. The applicant argues that the present invention as recited in independent claims 1, 6, and new claim 11 "an optical pulse output from said optical pulse light source [is shaped] into a super Gaussian pulse of a third order or higher" and then "a spectrum of an optical pulse sequence composed of shaped optical pulses [is expanded]" such that the spectrum of an optical pulse sequence is evenly extendable by first shaping an optical pulse through employing an array of 3 or more order super-Gaussian optical pulses and then acquiring optical components based upon the shaped optical pulse by expanding the spectrum of shaped optical pulses. The applicant argues that this difference results in difference in terms of

obtained light waves, i.e., arrays of pulses in the case of Watanabe et al. and continuous emission light waves in the case of the present invention. The applicant argues that according to the present invention, in contrast to Watanabe et al., the spectral extension is performed for spectrum components that include those corresponding to the continuously changing intensity of an optical pulse array so as to be able to acquire continuous emission light waves of which the wavelengths are different respectively. The applicant refers to the present Application page 6, lines 2-8 and page 7, lines 6-18 to support the claims.

While the specification of the present Application supports the applicant's argument as to why Watanabe et al.'s discussion does not relate to the present Application, the present Application's claims do not specifically say that no spectral components are taken out from the extended spectrum. The claims of the present Application do not specifically say that the wavelengths of the plurality of light beams have equal strengths after the spectrum expansion, as the specification of the present Application discloses on page 6, lines 6-8 and page 7, lines 6-18. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In regard to the remarks provided based upon the inventor's comments, it is noted that the present invention is concerned with a technology for generating plural continuous emission light waves from an optical pulse array by passing the optical pulse array through a non-linear medium for extending the associated optical spectrum and a

claimed inventive feature of the present invention lies, in particular, in employing an array of optical pulses of 3 or more order super-Gaussian waveform to shape an optical pulse so as to be able to extend its spectrum evenly - i.e., to generate a plurality of continuous emission light waves of which respectively associated optical powers are equal to each other - and then passing the shaped optical pulse through a non-linear medium to evenly extend the optical spectrum. However, the claimed present invention as recited in independent claim 1, 6 and new claim 11, using claim 1 as an example, provides "an optical pulse shaping unit making a shape of an optical pulse output from said optical pulse light source into a super Gaussian pulse of a third order or higher a spectrum expanding unit expanding a spectrum of an optical pulse sequence composed of shaped optical pulses". Watanabe et al.'s discussion anticipatorily rejects these independent claims.

The applicant also made remarks regarding subject matter in pending claim 4, which is objected to for depending on a rejected claim, but not rejected. The remarks are noted, but do not strengthen the applicant's argument.

With regard to the remarks that Watanabe et al. describes taking out a plurality of spectral lines together, therefore being concerned with generating a pulse array is noted to be different from the present Application's specification. It is also noted that the claimed present invention's "an optical pulse shaping unit making a shape of an optical pulse output from said optical pulse light source into a super Gaussian pulse of a third order or higher, a spectrum expanding unit expanding a spectrum of an optical pulse sequence composed of shaped optical pulses" provides a benefit of generating a

plurality of beams of continuous emission light of mutually equal power. However, this is not explicitly stated in the claims, therefor Watanabe et al. still anticipatorily rejects the current Application. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Thus, Watanabe et al. does anticipate the claimed present invention, because Watanabe does disclose each and every element of the claimed present invention's "an optical pulse shaper to shape an optical pulse output from said optical pulse light source into a super Gaussian pulse of a third order or higher a spectrum expander to expand a spectrum of the optical pulse sequence composed of shaped optical pulses from the optical pulse shaped" (e.g., new independent claim 11).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-8, and 11 are rejected under 35 U.S.C. 102(b) as being unpatentable over Watanabe et al. (2002/0041618).

As to claims 1 and 6 Watanabe et al. teaches an multi-wavelength light source comprising an optical pulse light source outputting an optical pulse sequence with an optical pulse shaping unit making a shape of an optical pulse output from said optical pulse light source into a super Gaussian pulse of a third order or higher [page 3, paragraphs 46-50, and the resulting pulse is illustrated in figures 1A and 1B]. Watanabe also teaches a spectrum expanding unit expanding a spectrum of an optical pulse sequence composed of shaped optical pulses and an optical splitting unit splitting the optical pulse sequence, the spectrum of which is expanded into light beams of respective frequencies [figure 9 and paragraphs 110-112].

As to claims 2 and 7, Watanabe et al. teaches that the spectrum expanding unit expands the spectrum by using an optical fiber as a nonlinear medium [paragraph 111 and figure 9].

As to claims 3 and 8, Watanabe et al. teaches the spectrum expanding unit expands the spectrum by using a highly nonlinear fiber or a holey fiber as a nonlinear medium [paragraph 57].

As to claim 11, Watanabe et al. teaches an apparatus comprising an optical pulse light source to output an optical pulse sequence, an optical pulse shaper to shape an optical pulse output from said optical pulse light source into a super Gaussian pulse of a third order or higher [page 3, paragraphs 46-50, and the resulting pulse is illustrated in figures 1A and 1B]. Watanabe also teaches a spectrum expander to expand a spectrum of the optical pulse sequence composed of shaped optical pulses from the

optical pulse shaper, and an optical splitter to split the expanded spectrum of shaped optical pulses into light beams of respective frequencies [figure 9 and paragraphs 110-112].

Claims 4,5,9, and 10 are objected to because they are dependent upon claims that are rejected, but are otherwise allowable.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly A. Rogers whose telephone number is 571-272-8047. The examiner can normally be reached on Monday through Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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